

REMARKS

The Official Action objects to Claims 1 and 18-22 for their recitation of "capable of". Although there is not agreement with the substance of the objection, Claims 1 and 18-22 are amended to recite that various elements of these claims are configured to perform the respective functions, thereby overcoming the objection. It is noted that the Official Action also mentions Claims 6 and 15 in conjunction with this objection, but no amendments have been made to these claims as neither claim recites that an element is "capable of" performing a respective function.

The Official Action also rejects Claims 1-5 and 7-17 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,778,985 to J. Everett Modisette, et al. in view of U.S. Patent No. 5,512,748 to Charles M. Hanson. Additionally, the Official Action rejects Claim 6 under 35 U.S.C. § 103(a) as being unpatentable over the Modisette '985 patent in view of U.S. Patent No. 3,680,001 to Thomas L. Paoli, et al. The Official Action continues to indicate, however, that Claims 18-22 are allowed. As discussed below, the device and method of Claims 1-17 are patentably distinct from the Modisette '985 patent taken in view of the Hanson '748 patent and/or the Paoli '001 patent. Since none of the cited references and, therefore, no combination of the cited references teaches or suggests displaying, in response to a laser light scanned across the first side of a target plate, at least one infrared thermal image on an opposed second side of the target plate with the at least one infrared thermal image having hotter and cooler portions at different respective temperatures. Based on the foregoing amendments and the following remarks, applicants respectfully request reconsideration of the present application and allowance of the claims.

In more detail, independent Claim 1 is directed to an infrared image generation device that includes a laser light source, at least one scanner that receives laser light and that redirects the laser light, a processor that controls operation of the scanner to generate an infrared image and a target plate that displays the infrared image. If desired, an infrared sensor could monitor the target plate so as to detect the infrared image displayed by the target plate. By determining if the infrared sensor does, in fact, detect the infrared image and, if so, in what manner the infrared sensor detects the infrared image, an infrared sensor can be tested in a cost-effective manner

without having to test the infrared sensor in actual field conditions which might, for example, involve the detection of the infrared signature generated by a missile or the like.

The target plate of the infrared image generation device of independent Claim 1 is defined to have a first side that receives the redirected laser light from the scanner and a second side, opposite the first side, that displays the infrared thermal image. As set forth by independent Claim 1, the infrared thermal image has hotter and cooler portions at different respective temperatures. Relative to the exemplary embodiment depicted in Figure 2, for example, the redirected laser light from the scanner can be received by the first side 23 of the target plate 18 and the resulting infrared image having hotter and cooler portions at different respective temperatures can then be displayed by the second side 25 of the target plate.

The Modisette '985 patent describes an imaging plate structure designed to create an electrostatic image within a photoconductive layer in response to radiation. By thereafter subjecting the imaging plate structure to scanning radiation (different than the radiation that originally created the electrostatic image), the electrostatic image may be read out electronically with electrical signals being produced that are indicative of the electrostatic charge stored by that portion of the imaging plate structure currently being subjected to the scanning radiation.

As now noted by the Official Action, the Modisette '985 patent does not teach or suggest a target plate that displays at least one infrared thermal image having hotter and cooler portions at different respective temperatures, as recited by independent Claim 1. As such, the Official Action cites the Hanson '748 patent relative to this aspect of Claim 1. In this regard, the Official Action states "Hanson teaches providing his device with a thermal imaging system with a processor and at least one infrared thermal image having hotter and cooler portions at different respective temperatures." In support of this proposition, the Official Action points to element 66 in Figure 2 of the Hanson '748 patent as well as the corresponding disclosure in column 6, line 6-16 of the Hanson '748 patent which the Official Action contends describes a thermoelectric cooler/heater that operates under control of a processor to adjust the temperature of a target plate to produce optimum sensitivity.

The Hanson '748 patent describes a thermal imaging system having a focal plane array 30 including a plurality of thermal sensors 32 and associated processing electronics 60 and

display 80. In order to avoid at least some of the deleterious effects occasioned by electrical conductivity between the focal plane array and the processing electronics, the thermal imaging system of the Hanson '748 patent also includes a plurality of other sensors, typically with one photosensor associated with each thermal sensor. The focal plane array may therefore be illuminated with electromagnetic radiation 22 from a source 20 in order to reproduce or transfer the image from the thermal sensors to the photosensors. The image, as captured by the photosensors, is then processed by the processing electronics and the resulting image may be presented upon a display. In this regard, the Hanson '748 patent describes that the display may be a CRT and may present "a visual representation of the radiance image on focal plane array 30 emitted by scene 12." See column 5, lines 13-14 of the Hanson '748 patent. As also described by the Hanson '748 patent, the thermal imaging system may include a thermoelectric cooler/heater 66 that can optimally adjust the temperature of the integrated circuit substrate 62 which includes the processing electronics 60 in order to improve the overall image quality.

As noted above, it is this thermoelectric cooler/heater that the Official Action points to as being capable of controlling the temperature of a target plate to create an infrared thermal image having hotter and cooler portions at different respective temperatures as set forth by independent Claim 1. As explained herein below, however, the thermoelectric cooler/heater of the Hanson '748 patent does not produce an infrared thermal image having hotter and cooler portions as presented by the target plate of independent Claim 1. Instead, the thermoelectric cooler/heater is designed to maintain the temperature of the integrated circuitry substrate 62 and, therefore, the temperature of the processing electronics 60 at a desired temperature. In this regard, it is well known that the processing circuitry operates as intended or operates optimally at a certain temperature or within a certain range of temperatures with poorer performance exhibited at higher or lower temperatures. As such, the thermoelectric cooler/heater is designed to maintain the integrated circuitry substrate at a temperature at which the processing electronics perform as intended and prevent, for example, any drop off in the performance of the processing electronics that might otherwise occur as a result of the processing electronics being heated due to the radiation that impinges upon the thermal imaging system.

Although the thermoelectric cooler/heater maintains the integrated circuitry substrate and, in turn, the processing electronics at a desired temperature, the thermoelectric cooler/heater and, indeed, no other element of the Hanson thermal imaging system constitutes a target plate that displays at least one infrared thermal image having hotter and cooler portions at different respective temperatures as set forth by independent Claim 1. Indeed, the only image that is created by the thermal imaging system of the Hanson '748 patent is that presented upon a display and described as a visual, not a thermal, representation of the scene. In this regard, the only example of the display that is provided by the Hanson '748 patent is a CRT which creates a visual image of the scene, but would be unable to create an infrared thermal image having hotter and cooler portions as set forth by independent claim 1.

Since both the Modisette '985 patent (as noted by the Official Action) and the Hanson '748 patent (as described above) fail to teach or suggest a target plate that displays an infrared thermal image having hotter and cooler portions, any combination of the Modisette '985 patent and the Hanson '748 patent also fails to teach or suggest this recitation of independent Claim 1. Not only do the Modisette '985 patent and the Hanson '748 patent fail to teach or suggest a target plate that displays at least one infrared thermal image having hotter and cooler portions at different respective temperatures as set forth by independent Claim 1, but the Paoli '001 patent also fails to teach or suggest this recitation and, in fact, is not cited for this proposition.

As set forth in prior Amendments, the Modisette '985 patent also fails to teach or suggest an infrared image generation device that displays a resulting infrared image having portions at different respective temperatures on its second side, opposite the side from which the target plate is scanned, as also set forth by independent Claim 1. Instead, the electrostatic image generated by the imaging plate structure of the Modisette '985 patent is not described to be on or at the side that is opposed to the side that receives the input. Instead, the charges are described by the Modisette '985 patent to migrate toward the same side from which the original illumination was received. In response to this line of argument, the Official Action merely indicates that it is well known in the art to form an infrared image on a second side of the target plate opposite the side across which the laser light has been scanned with reference to column 12, lines 20-61 of the Modisette '985 patent. As detailed in the prior Amendment, however, the Modisette '985 patent

does not teach or suggest the display of an infrared image on a second side of a target plate, opposite the side from which the target plate is scanned, and, if anything, suggests that the electrostatic image is on or at the side from which the original illumination was received. As such, if the Examiner is relying upon any evidence that is not of record in support of the proposition that it is well known to generate an infrared image on a second side of a target plate opposite the side that has been scanned, such as by taking Official Notice, the Examiner's reliance upon any such evidence outside of the record is seasonably challenged and the Examiner is requested to provide specific evidentiary support if this aspect of the rejection is to be maintained.

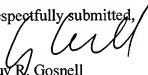
In an analogous manner to that described above in conjunction with independent Claim 1, independent Claim 11 is directed to a method for generating an infrared image that includes providing laser light, scanning the laser light across a first side of a target plate and displaying at least one infrared thermal image on a second side of the target plate, opposite the first side, in response to the laser light that has been scanned thereacross. As described above in conjunction with Claim 1, independent Claim 11 also recites that the display of the at least one infrared image includes the display of an infrared thermal image having hotter and cooler portions at different respective temperatures. As described above in conjunction with independent Claim 1, no combination of the Modisette '985 patent, the Hanson '748 patent and the Paoli '001 patent teaches or suggests the display of any type of infrared thermal image having hotter and cooler portions at different respective temperatures as recited by independent Claim 11. Moreover, no combination of the Modisette '985 patent, the Hanson '748 patent and the Paoli '001 patent teaches or suggesttz the display of an infrared thermal image on a second side of the target plate opposite the side across which laser light has been scanned.

For each of the foregoing reasons, independent Claims 1 and 11, as well as the claims that depend therefrom, are not taught or suggested by any combination of the Modisette '985 patent, the Hanson '748 patent and the Paoli '001 patent. Accordingly, the rejections of independent Claims 1 and 11, as well as the claims that depend therefrom, are overcome.

CONCLUSION

In view of the amendments and remarks presented above, it is respectfully submitted that all of the claims of the present application are in condition for immediate allowance. We therefore respectfully request that a Notice of Allowance be issued. The Examiner is encouraged to contact the Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application. It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,


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